



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR 11 —CHART INFORMATION

SECTOR 11

NORTHWEST COAST OF MADAGASCAR—T ANJON'I BOBAOMBY TO TANJONA VILANANDRO

Plan.—This sector describes the NW coast of Madagascar from Cap d'Ambre SW to Cap Sainte-Andre. The distance is about 380 miles. A landfall at dawn on the NW coast of Madagascar is recommended, owing to the intense thunderstorms, which occur in the afternoon, often lasting well into the night and severely restrict visibility.

11.1 Tanjon'i Bobaomby (Cap d'Ambre) (11° 57'S., 49° 16'E.) was [previously described in paragraph 10.2.](#)

Cap d'Ambre is visible from the NW at distances up to 15, and at times, 20 miles. The country W and SW of the cape has, from the W, a broken, irregular outline; the numerous hills and hummocks have bare sides and grass-covered summits. Ambinantsandra, rising about 8 miles SW of Cap d'Ambre, is tree-covered, and broader and higher than those about it; a round hill nearby is conspicuously dark. Le Coq (Ambohitra Koholahi) rises about 2 miles ESE of Ambinantsandra; it is not seen from the NW, because it is shut in by the latter, but is a useful mark for vessels in the vicinity of Baie Andramaimba.

Caution.—Between Cap d'Ambre and Pointe d'Angadoka, the coast is bordered by a bank, with depths of less than 91.4m, extending from 5 to 20 miles offshore; its outer edge is steep-to and descends into great depths. Vessels drawing more than 4m should be navigated with great care when approaching this bank, as in some places, there are depths of 4.9m over the flats and heads of coral, which flats are often of great extent and lie most frequently on the outer edge of the bank.

It may be considered certain that, from the nature of this bank and the adjacent coast, there may be dangers other than those shown on the chart. Constant sounding and notice of any change of color of the water, are essential when navigating off this coast.

Baie Lotsoina (12° 00'S., 49° 13'E.) is entered 4.5 miles WSW of Cap d'Ambre; it affords good shelter for vessels, particularly those of low power, awaiting an opportunity to round Cap d'Ambre from the W.

Winds—Weather.—Although the anchorages within Baie Lotsoina are landlocked, they are, however, swept by violent offshore squalls.

Tides—Curr ents.—The flood current sets very strongly WSW across the entrance of Baie Lotsoina, and care is necessary in entering the channel, but when fairly entered, the current follows the channel.

Aspect.—The entrance is not easy to identify from a distance, but shows up best from the NNW or NW.

The shores of Baie Lotsoina are of uniform appearance, low, flat, and of coral formation, rising vertically to an elevation from 3 to 4.5m, and thickly covered with bushes. The hills in the background are wooded.

Anchorage.—Vessels can obtain anchorage off the entrance of Baie Lotsoina from 20 to 21m, mud, but the proximity of the

coastal reef renders it necessary to be ready to weigh anchor, if the wind blows onshore.

Ile Basse lies about 1.3 miles SE of the entrance; vessels can obtain anchorage with the islet bearing 220°, in 14m, good holding ground, mud. Vessels can also anchor in the basin NW of the islet.

Directions.—It is better to leave Baie Lotsoina in the early hours of the morning, before the breeze increases, and it is advisable to mark the projecting points of the coastal reef as the light is then bad.

Caution.—The best time for seeing these dangers is in the afternoon.

11.2 Baie Ampanasina (12° 01'S., 49° 12'E.), entered 1.2 miles SW of the entrance of Baie Lotsoina, closely resembles the latter inlet. Buoys should be placed to mark a fairway through the reef-fringed entrance channel before entering. The anchorage, for small vessels in 7 to 9m, is restricted.

Directions.—Local knowledge is essential.

The best time of day to enter the bay is during the hours of early morning when the winds are normally light and the reefs can be seen; it is even better, for the purpose of seeing the reefs, to proceed into the bay before the sun has risen above the hills to the E to shine directly into the eyes. The entrance should be approached by steering 112° for Ambinantsandra.

Vessels should proceed through the outer part of the channel by keeping a little N of the 128° range established by Le Ballon and L'Ablette; an entering vessel should not approach Rocher Sentinelle closer than 0.6 mile. When this rock bears about 230°, and is open N of Pointe Vedette, the course should be changed more to the S to avoid the projecting reef on the N side of the entrance channel. When Rocher Aiguille bears about 262°, and is open N of Pointe Vedette, course should be changed to ESE to avoid the projecting reef on the S side of the channel. After clearing the entrance channel, course should be changed to 147° for Colline Tiraailleuse, which leads to the anchorage, but passes very close SW of a 1.8m shoal.

11.3 Helodrand Ambavanibe (Baie Ambavanibe) (12° 03'S., 49° 10'E.) is entered between Pointe Andranovondrony, which lies 2.2 miles SW of the SW entrance point of Baie Ampanasina, and Pointe Vedette, 1.2 miles farther SW.

Winds—Weather.—The winds of the Southeast Monsoon and the current give rise to a turbulent sea in the entrance channel that makes it difficult to discern the outer edges of the bordering reef.

Tides—Curr ents.—The tidal currents attain velocities from 2 to 3 knots at springs, and care must be taken when entering or leaving.

Aspect.—Baie Ambavanibe can be identified by the wooded hills surrounding it, one of which, Colline Ambinantsandra (12° 04'S., 49° 12'E.), is typical.

Anchorage.—The best anchorage during the SE trade wind is in 14m, mud, under the lee of Sommet Tirailleuse (12° 06'S., 49° 13'E.). The wind at the anchorage is strong at this season, and squalls blow down the sides of the hills, raising a choppy sea and causing vessels to drag their anchors.

Directions.—During the monsoon season, the best time to pass through the entrance is at daybreak.

Caution.—The reefs which fringe the shores of Baie Ambavanibe dry in places, but are difficult to distinguish when they are covered or when the light is unfavorable.

The reefs fringing the entrance points of the inlet can be easily seen at half tide.

11.4 Tanjon' Voailava (Cap Voailava) (12° 07'S., 49° 06'E.), the NE entrance point of Baie Andramaimba, is a long cape of yellow sand.

Baie Andramaimba is entered between Tanjon' Voailava (Cap Voailava) and Saint-Sebastian, about 29 miles SW. This large area consists of an outer roadstead, an inner roadstead, and a number of bays.

The outer roadstead is the area lying generally W and N of the islands Nosy Lakandava (12° 15'S., 48° 58'E.) and Nosy Hara (12° 15'S., 49° 01'E.); the chain of reefs that extends N from Nosy Hara marks the approximate E limit of the outer roadstead.

Vessels can anchor almost anywhere in Baie Andramaimba.

Winds—Weather.—When the breeze is fresh at Cap Saint-Sebastian, the sea becomes covered with foam as though there were breakers in the channels.

Tides—Currents.—The tidal currents in the neighborhood are irregular. The flood current generally sets SW and the ebb current sets NE; they are sometimes very strong and cause eddies in the channels about Nosy Hao (12° 07'S., 49° 04'E.).

The resultant currents and tidal currents near Nosy Anambo (12° 16'S., 48° 39'E.) sometimes attain a velocity from 2 to 5 knots.

Aspect.—Potopoto Hill (12° 21'S., 48° 59'E.) may be considered as a location separating Baie Andramaimba into two distinct zones.

Northward of the hill a vessel is sheltered from the ocean swell by islands and banks, but there is very little shelter from the Southeast Monsoon except close under the land.

Southward of the hill, particularly in Baie de Befotaka and near Cap Saint-Sebastian, the SW swell is strongly felt, especially during January, February, and March; the vessel itself is sheltered from the Southeast Monsoon by Montagne d'Ambre (12° 38'S., 49° 05'E.) and its numerous spurs.

Anftmsimno Hill rises about 4.3 miles ESE of Cap Voailana; this conspicuous hill has a rounded summit partly covered with trees. Other summits conspicuous from positions off the bay are Andramaimbo Hill and Ankaramisampana, which rise on the isthmus separating Baie Andramaimba on the NW coast from Baie de Diego-Suarez on the NE coast; these summits are useful marks from either side of Madagascar.

Nosy Foty (Nosi Foti) (12° 12'S., 48° 59'E.) has a beach that is conspicuous in bright weather.

Nosy Faty (Nosi Fati) (12° 12'S., 48° 48'E.) is a bank; the whiteness of the bank, except at HW, is another useful mark.

Nosy Andantsara (12° 16'S., 48° 59'E.) has two peaks that are separated by a deep gully that is very conspicuous from the S.

Nosy Mely (12° 17'S., 48° 59'E.) has a conspicuous detached granite rock, 19.8m high, lying close S of it.

Baie Amponkarana indents the NE shore of Baie Andramaimba. Sommet Coupure, a summit 131m high, rises close to the head of the bay. A summit, 208m high, rises about 0.5 mile N of Sommet Coupure.

Lomotro (12° 12'S., 49° 10'E.) is a village; a conspicuous wooded bluff, 64m high, rises W of the village.

Helodrano Courier (Baie du Courier) indents the E shore of Baie Andramaimba. Les Deux Mamelles (2° 14'S., 49° 11'E.) are two bare, rounded summits, 246m high, rising close together. Sommet Nu, 351m high, rises nearly 1.3 miles S of Les Deux Mamelles. Petite Selle is a hill, 149m high, rising about 3 miles SSW of Les Deux Mamelles. An islet, with a fairly conspicuous wooded hill, 70m high, rises from the marsh at the head of Baie du Courier.

Helodrano Ambararata (Baie d'Ambararata) lies SW of Baie du Courier. Ankitikona, a densely wooded, conspicuous peak, 267m high, rises about 1 mile inland from the head of the bay.

Helodrano Ampasimena (Baie Ampasimena) indents the SE shore of Baie Andramaimba. Potopoto Hill, a useful mark, rises about 1.5 miles SW of the SW entrance point of the bay; this isolated hill is 59m high, conical in shape, bare, and yellow in color.

Helodranon'i Befotaka (Baie de Befotaka) indents the S shore of Baie Andramaimba. The various summits on the Orontani Peninsula are useful marks for the bay; these summits are dominated by Ambohiposa Summit, which is about 514m high, and rises 3 miles SW of the SW entrance point. Sommet Depouille is 138m high and rises about 2.5 miles SE of Pointe Baron (12° 22'S., 48° 58'E.). Mont Roti, a hill, rises about 5 miles E of Sommet Depouille. Grand Pele, a conspicuous bare flat hill, rises about 1 mile S of the head of Baie de Befotaka, and between this hill and the coast to the NNE is a range of conical wooded summits.

Ambatobe, a peak conspicuous because of its steep sides and dark color, rises among the bare yellow hills, which back the coast; the peak rises about 4.5 miles NW of Grand Pele. A conspicuous waterfall is visible about 3 or 4 miles inland, in a position S of the SE portion of Baie de Befotaka.

The various passes to and within the various parts of Baie Andramaimba are not marked by buoys or beacons.

Anchorage—Outer Roadstead.—Vessels can find good anchorage in 9 to 18m, sand and coral, within the triangle formed by Nosy Vaha, Nosy Fasy, and Nosy Hara; in depths of more than 20m, the bottom is sand and mud or only mud.

When anchoring in the W part of this anchorage, vessels must be careful to avoid the deep gully, which lies E and SE of Nosy Fasy (12° 10'S., 48° 53'E.), where the tidal currents are sometimes very strong, the holding ground poor, and the sea rough during the SE trade wind.

There is good anchorage in 20m, under the shelter of the W coast of Nosy Hara, with Nosy Belomotro lying 1.5 miles W of the S end of Nosy Hara, in line with Nosy Lakandava, 1 mile WSW of Nosy Belomotro, bearing 250°, and Rocher Le Lion, a small islet 1.5 miles SSW of Nosy Hara, bearing 188°.

A vessel has anchored in 11m, 0.5 mile S of Nosy Anambo Light.

Baie Miroana.—Small vessels with local knowledge can obtain anchorage N of Mont Ambatoarara, in from 9 to 11m, good holding ground.

Baie Amponkarana is the best anchorage in the S part of the bay, in 10m, mud, with Cap Voailava bearing 297°, a little open of the SW extremity of the peninsula on the N side of the entrance of the bay, and Les Cristaux, bearing 240°, just open NW of the S entrance point. There is a heavy swell in the bay during the SE trade wind.

Baie du Courier has anchorage in from 9 to 13m, but care must be taken to choose good holding ground of mud or of sand and mud.

The most sheltered berth is in 7 to 7.6m, mud, with the E extremity of Ilot du Courier (12° 14'S., 49° 09'E.) bearing 199° and Les Mamelles bearing 125°.

During the SE trade winds, there are sometimes heavy offshore squalls, rendering it necessary to anchor close off the SE shore of the bay, but this is only possible for light draft vessels.

In Baie d'Ambararata, vessels of light draft can anchor in the SW part of the bay in 5.5m, with the middle of the reef extending ENE from the W entrance point in line with the large rock at the NE extremity of Nosy Hara, bearing 325°, and Les Cristaux bearing 028°, and just open NW of Pointe Mangoaka. The bottom in the bay is mud, good holding ground. The offshore squalls are sometimes very strong.

Baie d'Ampasimena offers useful shelter to small vessels with local knowledge, especially from NE squalls at the changes of the seasons.

Helodrano Befotaka (Baie de Befotaka) is open to N winds, and a SW swell is strongly felt, especially from January to March; it is well-sheltered from the SE trade wind, and during this season there is scarcely any wind felt in the bay. There is good holding ground of mud and sand.

Baie d'Ironono, close S of Ponte Baron, is open to a swell from seaward, and is unsafe during strong W winds. Small vessels can anchor in the S part of the bay, opposite the white cliffs, taking care to avoid the reefs which fringe the shore of this bay and are not visible at HW; anchorage in the bay is not recommended.

The landing place in Baie d' Ironono, accessible only at HW, is at the mouth of the stream S of the village.

Caution.—Most of the more extensive banks uncover at LWS, and they appear of a dirty yellow color. The smaller detached patches are particularly dangerous in that they do not uncover nor otherwise reveal their presence.

The reefs and banks in the outer part of the bay are covered with green water which contrasts markedly with the blue of deep water. Elsewhere the reefs and banks are invisible when covered with 1.8m or more of water.

The strong SE winds raise a short choppy sea in Baie Andramaimba that appears to affect only the surface; at HW this sea causes neither breakers nor ripples over the dangers below-water. Although a lookout should be stationed aloft at all times, his ability to detect dangers below-water in the inner part of the bay will be limited by the conditions of visibility.

The water on this part of the W coast of Madagascar and toward Nosy Lava (12° 44'S., 48° 41'E.) is turbid, and the coral

reefs can be seen only from a short distance; these reefs are steep-to, so that sounding gives little warning.

Patches of spawn often appear like coral patches; the water is sometimes yellow in depths over 7.3m. The yellow water often covers considerable areas and gives the impression of dangerous shoals without the lead revealing any change in depth. This discoloration may be due either to spawn or to mud being stirred up from the bottom by tidal currents or other influences.

11.5 Maruteza Point (12° 24'S., 48° 46'E.) is the N extremity of the Orontani Peninsula. Anchorage, perfectly sheltered during the Southeast Monsoon, can be taken E or NE of Maruteza Point. A vessel has anchored in 31 to 33m, in a position with Ambohiposa Summit, bearing 160° and Nosy Valiha, bearing 265°. D'Andovo Honkou Bay indents the Orontani Peninsula on the NW side of Cap Saint-Sebastian. Vessels waiting for daylight by which to enter Baie Andramaimba can anchor in D'Andovo Honkou Bay, off the village of Andovo Honkou, which is situated about 1.5 miles NE of Tanjon' Anorontany (Cap Saint-Sebastian).

In general, the best anchorage is in the S part of the bay where the coastal reef narrows considerably. The bottom, of compact sand, is good holding ground. The depths decrease rapidly from 18.3 to 14.6m, and then gradually to the shore.

Nosy Mavoni (12° 26'S., 48° 39'E.) provides anchorage, in 28m, in a position with Nosy Mavoni bearing 290°, distant 0.2 mile; the bottom in this position is sand and coral.

Nosy Meli, bearing 027° and just open W of the NW extremity of Nosy Hara, leads between the mainland and the dangers S of Grand Recif.

The S extremity of Nosy Anjombavola, bearing 250° and open S of the S extremity of Nosy Hara, leads between Recifs de Nosy Hara and Little Pass Banks. Nosy Foty, bearing 310° and seen over the sandy isthmus, also leads between these dangers.

Les Cristaux, bearing 124° and in line with Andramaimbo Hill, leads between Fosse Reef and Recif Est over the outer part of the bank, extending NE from Fosse Reef.

The S extremity of Ilot du Courier, bearing 098° and in line with the NW of Les Deux Mamelles, leads between Banc de l'Entre (Entrance Shoal) and the dangers extending from Basse Pointe.

Ambamonetsimani Islet (12° 27'S., 48° 43'E.), a rugged rock shaped like a haystack, lies about 1 mile W of Cap Saint-Sebastian.

Baie Andranoaomby (Andranoambi Bay) (12° 28'S., 48° 47'E.) is entered 2.5 miles ESE of Cap Saint-Sebastian. All the islets near the entrance of the bay have seaward sides of perpendicular basaltic cliffs, which are useful marks for the entrance. Baie Andranoaomby affords shelter from all winds except those from between the S and W, which rarely blow with any force, except during the rainy season. In the dry season, the strong SE breeze raises a heavy swell, which runs around the E entrance point and enters the bay, but apart from this inconvenience the anchorage is safe.

A vessel of moderate draft can anchor near the middle of Baie Andranoaomby, in 9 to 10m, with the W side of Nosy Antolo in line with the W entrance point, bearing 200°; a small vessel can anchor on the same alignment, nearer the head of the bay and off the village of Ambaro, in 4m, mud.

In order to enter the bay, after having passed Nosy Antolo, it is advantageous to stay close to the W shore, where the coastal reef is very narrow, whereas that of the E shore is wide and less steep-to. Antasahabe is a village situated in position (12° 32'S, 48° 50'E.). A large and conspicuous palm tree is a mark for the village. Anchorage has been taken off the villages in 7m, with the SW extremity of Nosy Mandazona (12° 28'S., 48° 43'E.) in line with the middle of Nosy Mananono (12° 27'S., 48° 41'E.), and the conspicuous palm tree in the village in line with a mountain in the background.

Baie Ampamonty is entered between **Pointe Oravaka** (12° 34'S., 48° 49'E.) and Bekotoko Point.

Depths—Limitations.—The depths in the entrance of Baie Ampamonty are 10.9 to 14.6m. Within Rochers Jio-Jio, the depths are less than 9.1m and within Nosy Antaly the depths are less than 5.5m. The head of the bay is encumbered by mud banks.

Caution.—Rocher Oravaka, 14.6m high, lies 0.5 mile SW of Pointe Oravaka.

11.6 Nosy Vory, an islet 70.7m high, lies 0.7 mile offshore and W of the village of Ampasimanahy; it is connected with the shore by a bank, with a least depth of 5.5m.

Banc Ampamonty, lying 3.5 miles S of Rocher Oravaka and 1.5 miles offshore, dries, but in calm weather, when covered by a meter depth, there is no appearance or warning of danger, even from a short distance. A conical wooded hill at the head of Baie Ampamonty, bearing 030°, open NW of Nosy Vory, leads about 0.4 mile NW of Banc Ampamonty; if the conical wooded hill cannot be seen, a vessel should not bring the summit of Nosy Vory to bear less than 040°. The conical wooded hill, in line with a conical 50m hill which rises 1.2 miles SSW, bearing 021°, leads through the fairway between the coast and Banc Ampamonty and through the channel E of Nosy Vory.

Rochers Jio-Jio, two rocks about 8.5m high, lying in mid-channel 1 mile N of Nosy Vory, lie on the NW edge of a reef, which dries and extends 0.5 mile E from the W rock; the reef lies near the middle of a bank, with depths of less than 5.5m, which extends 0.9 mile ENE and WSW.

Nosy Antaly, 145.7m high, lying 1.2 miles NNE of Rochers Jio-Jio, is conical and covered with trees; it is fringed by a reef and a shallow bank. A shoal, with a least depth of 4m, lies 0.4 mile SSE of the SE end of Nosy Antaly.

Aspect.—A good landmark is a conical hill (12° 32'S., 48° 53'E.), with a wooded summit, 218.5m high, rising 1 mile N of the head of the bay and on the isthmus between it and Baie de Befotaka.

Anchorage.—A vessel drawing 4.9m can anchor at the entrance of Baie Ampamonty, sheltered from SE winds by Nosy Vory and the coast S of the islet.

A vessel bound for the anchorage from the N should pass W of Rocher Oravaka, and then between Rochers Jio-Jio and Nosy Vory, anchoring in 9 to 11m, 0.5 mile NE of Nosy Vory.

A vessel proceeding to the head of the bay can pass between Rochers Jio-Jio and Nosy Antaly, but care must be taken not to pass more than 0.2 mile from the SE side of Nosy Antaly in order to avoid the shoal, with a least depth of 4m, 0.4 mile SSE of the islet.

Alternatively, a vessel can pass between Rochers Jio-Jio and Nosy Vory, and then bring the 50m hill, at the head of the bay, in line with the conical wooded hill, 1.2 miles NNE, bearing 021°, which leads E of the 4m shoal, mentioned above.

Small vessels can obtain good anchorage off Antafiabe, a village on the coast N of Nosy Antaly, in 4 to 5m. This anchorage is reached by passing E of Nosy Antaly, but care must be taken to avoid some projecting sandspits.

Vessels with local knowledge can leave this anchorage by the narrow channel NW of Nosy Antaly.

Baie Ampasindava is entered between Pointe Bekotoko, the SE entrance point of Baie Ampamonty, and Nosy Tsiringidringitra, 1 mile SSW.

A coral reef, which dries, extends up to 0.6 mile from the SE shore of the bay; Nosy Tsiringidringitra lies at its NW edge, 0.4 mile NW of Pointe Bemoka, with which it is joined by a ridge of stones.

Baie Ampasindava affords good temporary anchorage in 6 to 11m, sufficiently sheltered from SE winds by Nosy Tsiringidringitra, Pointe Bemoka, and the reefs connecting them.

Large vessels can anchor in 12 to 14m, W of Nosy Mamoko, near the W shore of the bay. Nosy Mamoko can be rounded to the N or S.

Baie Ankazomalemy is entered between Nosy Satza, 1.5 miles S of Pointe Bemoka and Pointe Andamoty, 2.5 miles SE.

Anchorage can be obtained in the entrance of the bay, midway between Nosy Satza and Pointe Andamoty, in about 7m.

Pointe Andiako (12° 46'S, 48° 54'E.) provides anchorage to small vessels with local knowledge S of the point, in about 4.9m; the anchorage is sheltered from the SE trade winds, which, in this vicinity, usually dies down at sunset.

A vessel approaching the anchorage off Pointe Andiako should steer with the summit of Nosy Ankarea, astern, bearing 265° and well open S of Mont Ankarana; these two bluff hills show up well against the horizon, which is ordinarily clear W after sunset, and remain visible long after the other land has disappeared from view.

In case of thick weather coming on before reaching the anchorage, a vessel should not approach within depths of 11 or 12.8m.

Between Pointe Andiako and Port Saint-Louis, there is a shallow bay, the shores of which are mostly lined with mangroves.

11.7 Port Saint-Loius (Antsohimbondrona) (Seranana) (13° 05'S., 48° 50'E.) is situated close within the mouth of Riviere Mahebo, 40 miles S of Cap Saint-Sebastian.

The usual anchorage for freighters at Port Saint-Louis is on the alignment of the lighted beacons, bearing 110°, from 3 to 4 miles offshore in a depth of 9m, with Nosy Mangiho in line with E side of Nosy Lava, bearing 345°. The holding ground is good here. An uncharted wreck lies about 4 miles W of Port Saint-Louis.

Baie d'Ambaro is entered between Port Saint-Louis and Pointe de Namahory, the NE extremity of Nosy Faly, 23 miles SW. The bay is exposed to N and NW winds, but is sheltered from W winds by Nosy Faly. There is good anchorage anywhere in Baie d'Ambaro, which has a bottom of mud, but it is open N.

11.8 Iles Mitsio lie about midway between the Orontani Peninsula and Presquile d'Ambato (Presquille d'Ambato) (13° 22'S., 48° 30'E.). **Nosy Mitsio** (12° 53'S., 48° 37'E.), the largest island of the group, is 217m high at a sugarloaf hill, Mount Ankarana, near its N extremity.

Tides—Curr ents.—Observations of the tidal currents off the E coast of Nosy Mitsio were made in January and February, during the Northwest Monsoon. It was found that the flood current generally set between the SE and SW, altering clockwise; it attained its maximum velocity about 3 hours before HW, and at HW set E and was very weak. The ebb current set between the NE and W, altering anti-clockwise, and attained its maximum velocity about 3 hours after HW. The maximum velocity observed was 1.25 knots. The current in the neighborhood of Iles Mitsio usually sets W at a rate of 1 to 2 knots.

Baie de Maribe, on the NE side of the promontory extending NW from the S part of Nosy Mitsio, is entered between Pointe Ampanomilay, the NE extremity of the promontory, and Pointe Alankirimy, 2 miles E; it is open to winds from between the NW and NE. A coral reef fringes the shores of the bay.

Roche Prevoyante, which dries, lies 0.3 mile NW of Pointe Alankirimy; southeast of Pointe Ampanomilay, a spit, with a depth of 7.6m, extending 0.8 mile NNE from the shore, reduces the width of the entrance of Baie de Maribe to 0.8 mile. A 2.7m coral patch lies on the E side of Baie de Maribe, 0.8 mile SSW of Pointe Alankirimy.

Good and well-sheltered anchorage can be obtained in Baie de Maribe, in 20m, mud, with Pointe Alankirimy bearing 040°, distant 1 mile, and Mont Leja, 4.5 miles SSW of Mont Ankarana, bearing 113° and in line with a village on the E shore. Small vessels with local knowledge can anchor nearer the head of the bay in 6 to 7m.

A vessel with a draft of 4.9m can anchor in 10m with Mont Leja bearing 107° and a point NW of Mont Bekaikay bearing 175°.

The best approach to Baie de Maribe is through Grande Passe, SW of Nosy Ankarea; this wide passage has moderate depths and is free of dangers.

Passe du Nord, between Nosy Fisaka and Nosy Ankarea, and the narrow channel E of Nosy Fisaka, should only be used by small vessels with local knowledge.

Baie d'Ampasimena lies on the E side of Nosy Mitsio on the S side of Pointe d'Ampangala (12° 53'S., 48° 37'E.). A rock, which dries 0.3m, lies 0.3 mile E of Pointe d'Ampangala.

Nosy Vazoana, 23.5m high, an islet fringed by a coral reef, lies in the approach to Baie d'Ampasimena, 1 mile ESE of Pointe d'Ampangala. Rocher Bevaoko, midway between Nosy Vazoana and the coast, is 4m high; a bank, with depths of less than 9.1m, extends 0.4 mile SSE from it.

The anchorages on the E side of Nosy Mitsio afford shelter during the Northwest Monsoon, but the wind often veers E at night causing a swell. Off Baie d'Ampasimena, vessels can anchor SW of Nosy Vazoana in 13 to 16m, sheltered from N winds.

Baie Alandrota is a cove between Pointe Ampasimenakely, 2 miles S of Pointe d'Ampangala, and Pointe Betamenaka, 72.2m high, 0.8 mile SW. A coral shoal, with a depth of 8.8m, lies 0.7 mile SSE of Pointe Betamenaka.

Baie Alandrota affords anchorage, sheltered from N winds, in from 14 to 17m.

11.9 Nosy Be (Nossi Be) lies off a large indentation in the NW coast of Madagascar, between Nosy Faly and Pointe d'Angadoka, 30 miles WSW; it is volcanic, much indented, and can be identified from the NW by the high land in the background.

Nosy Ambario Vato (Nosy Komba), which can be seen from a distance of 35 to 40 miles, lies 1.5 miles S of Nosy Be.

Mont Lokobe, at the SE end of Nosy Be, is the highest part of the island; it is a granite peak, with deep ravines.

Pic du Tanylatsaka (13° 19'S., 48° 14'E.) is the highest peak in the center of Nosy Be.

Tides—Curr ents.—The flood current sets E and the ebb sets W at velocities of 0.5 to 1.5 knots; in the channel between Nosy Be and Nosy Komba, the currents attain velocities of 2 to 2.5 knots at springs. The turn of the tidal current occurs from 1 to 2 hours after HW and LW at Hellville (Andoany).

Caution.—Vessels should not proceed between any of the banks in the approaches to Nosy Be, nor between them and the island itself; it is well not to approach closer than 12 miles to the N or W shores of the island.

Helodranon'i Befotaka (Baie de Befotaka) is entered between **Pointe d'Amboday** (13° 13'S., 48° 15'E.) and a promontory, of which Pointe d'Andilah is the W extremity, 4 miles SW; its entrance is partially obstructed by rocks and shoals. The shores of the bay are fringed in places by a reef, which dries.

Roche Soa, with a depth of 0.9m, lies 1.5 miles SW of Pointe d'Amboday and 1 mile offshore; a shoal, with a depth of 8.8m, lies 0.4 mile NNW of this rock, and a bank, with a least depth of 7.6m, extends 0.5 mile S from Roche Soa.

In the middle of Baie de Befotaka, there is an area which affords anchorage in 14 to 20m, free from dangers; the sea breeze is usually strong here and, blowing from the NW into the open bay, causes a troublesome swell.

11.10 Ile Sakatia (13° 18'S., 48° 10'E.) lies from 2.3 to 4 miles SSW of Pointe Andilah, and from the offing, appears to be part of the main island; its white and reddish dunes are conspicuous. The island is fringed by a reef, and separated from the coast E by a shallow channel, 0.4 mile wide. A spit, with a least depth of 8.8m near its outer edge, extends 1 mile N from the NW end of the island.

There is good anchorage, in from 16 to 20m, muddy clay, close off the SE side of Ile Sakatia; this anchorage is sheltered from all but W and SW winds, which rarely blow here.

Baie de Fascene is entered between a point 1 mile SSE of Pointe d'Andranizany and Pointe de Berambo, 2 miles farther SSE. Rocher Noir, 4.9m high, lies 0.3 mile offshore, about 1 mile NW of Pointe de Berambo. There is anchorage in Baie de Fascene, E of Rocher Noir, in 12.8m, mud or muddy sand; the depths decrease suddenly and there is usually a swell.

Baie d'Ambatozavavy is entered between Pointe Andranogoaka, which lies 2.2 miles S of Pointe de Berambo, and Pointe d'Ampassipohe, 2 miles S. A reef, which dries, lies 0.4 mile NE of Pointe d'Ampassipohe.

Anchorage can be obtained, in 10 to 12m, soft mud, midway between the entrance points of Baie d'Ambatozavavy. The sea breeze is not felt here, but E winds are dangerous.

Pointe Tafondro (13° 24'S., 48° 22'E.) is the SE extremity of Nosy Be. A spit, which dries out 0.2 mile, extends 0.9 mile ESE from Pointe Tafondro.

The existence, positions, and coloring of the buoys off the S shore of Nosy Be cannot be relied upon.

Anse du Cratere is entered between **Pointe du Cratere** (13° 24'S., 48° 14'E.) and Pointe Mahatsinjo.

A spit extends 0.1 mile NE from the NE extremity of Pointe du Cratere; near its extremity there is a rock, which dries 0.6m. The W shore of Anse du Cratere is fringed by a reef. From the E side of the bay, an extensive reef, which consists of rocks, shingles, and sand, and dries in part, extends 1 mile offshore and 0.2 mile S from Pointe Mahatsinjo.

Four oil tanks stand on the E side of Pointe du Cratere. Pointe Mahatsinjo is 52.1m high; the hills in its vicinity are wooded.

Oil Terminal.—Vessels moor, heading about 120°, with two anchors forward and stern lines secured to two buoys close inshore: there is reported to be a depth of 9.1m at the buoys. The berth is understood to be suitable for vessels up to 6,000 dwt.

Tankers with cargo for the oil terminal, but which are too large to moor off the terminal, anchor S of Pointe a la Fievre, in depths of 14m, to transfer cargo to smaller vessels.

Anchorage is suitable for vessels of maximum length of 200m and maximum draft of 12m; larger vessels anchor in any convenient sheltered area.

There is no local pilot, but one can be made available from another port if at least 4 days notice is given. Pilotage is advisable as the marks for the approach and for anchoring are not easily identified: vessels should pass between Pointe du Cratere and Banc Souzy on a course of about 055°.

The Port Captain should be advised of the expected time of arrival, draft, length, tonnage and nationality.

The tidal current in the vicinity of the berth is reported seldom to exceed 1 knot. Two small tugs are stationed at Hellville.

Anse du Cratere affords anchorage 0.2 mile E of Pointe du Cratere, in 16.5m, sheltered from W winds. A beacon, standing 0.4 mile N of the NE extremity of Pointe du Cratere, leads to the anchorage when bearing 329°.

Approaches to Hellville (Andoany)

11.11 Nosy Tanihely (Tany Kely), 4.2 miles SSW of Pointe Mahatsinjo, is distinctive and fringed by a coral reef; it may be safely approached within a distance of 1 mile from any direction. A conspicuous rock lies close off the N extremity of the islet. A light is shown from the islet.

Nosy Komba lies with Pointe Ambarionaomby (13° 26'S., 48° 21'E.), its N extremity, 1.7 miles SSW of Lohatanjon'i Tafondro (Pointe Tafondro). A sanitarium is situated on the island at an elevation of 595m.

Ilot Ambariobe lies 1.2 miles ENE of Pointe Ambarionaomby. Ilot Ambariobe and Ilots Ambariotelo, a group of rocky islets, 0.2 mile NW, lie on a reef which extends 0.4 mile WNW from Ilots Ambariotelo and 0.3 mile S from Ilot Ambariobe. The channels SW and close N of the reef should not be used.

Nosy Vorona, fringed by a reef, lies 0.3 mile N of Ilots Ambariotelo and 0.8 mile SSE of Pointe Tafondro; there is a 6.4m patch at the W end of a shallow bank, which extends 0.8 mile W from the islet, and between them are several coral heads, with a least depth of 4m. On the shallow bank extending 0.4 mile E from Nosy Vorona there are four rocks, which dry, nearly 0.1 mile from the islet.

Ararano Du/Nosy Vorona (Passe Lokobe), between Nosy Komba and Nosy Be, is the normal daytime route for ships coming from the N and heading to Hellville. The least depth in the passage is 8.4m; the buoyage allows large vessels to take it at the beginning of HW. The buoyage has been reported as unreliable.

Hellville (Andoany) (13° 24'S., 48° 17'E.)

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11.12 Hellville is situated on the S coast of Nosy Be; the port consists of a town and a very small natural harbor. Rade d'Hellville indents the coast between Lohatanjon'i Mahatsinjo and Lohatanjon'i Lokobe (Pointe Lokobe), 3 miles E; its N shore is indented by three coves, of which Anse du Plateau is the middle one and the only one frequented by shipping.

Aspect.—Anse du Plateau is entered between a promontory, on which the town of Hellville stands, and Pointe a la Fievre, 0.3 mile E. The promontory slopes steeply seaward, and there are numerous buildings on the sea front.

Range lights are exhibited at the head of Anse du Plateau; in line bearing 017°, these lights lead to the anchorage position for large vessels and to the anchorage position E of the mole.

Range lights are exhibited about 0.3 mile W of the mole light; in the SE approach, these lights, in line bearing 305°, lead clear of Pointe Lokobe and then to the anchorage position for large vessels. In 1980, it was reported that the front light was partially obscured by trees, except on the leading line.

Signals.—A signal station stands on the summit above Pointe Mahatsinjo. Signals indicating the locality threatened by a cyclone are shown.

Anchorage.—Vessels can anchor off the S coast of Nosy Be, W of Nosy Komba, in from 14 to 23m, good holding ground of sand or muddy sand; it is well-sheltered here from all but W winds. In Rade d'Hellville, the anchorage for large vessels at the intersection of the alignments of the range lights at the head of Anse du Plateau, bearing 017°, and the range lights about 0.3 mile W of the mole light, bearing 305°, in 15.8m; a vessel can also anchor here with the mole light in line with Antorotoro, a peak 151m high, 1.7 miles NNW, bearing 335°, and Pointe Lokobe, in line with a rocky islet close N of Pointe Ambarionaomby, bearing 114°. The anchorage is well-sheltered, but winds from between the WSW and W cause a swell.

Small vessels can anchor closer inshore, 0.1 mile E of the mole, with the range lights at the head of Anse du Plateau range bearing 017°, in 9m.

The anchorage in the cove W of Anse du Plateau is a little more sheltered from a W swell, but communication with the shore is more difficult, as boats have to round the S extremity of the reef, which extends S from the town to reach the mole.

Coastal vessels with local knowledge can anchor as convenient off the village of Ambanoro at the head of Baie d'Ambanoro, the easternmost of the three coves indenting the N shore of Rade d'Hellville.

Directions.—The route recommended to vessels approaching Rade d'Hellville from the W passes S of Grand Banc de l'Entree, Banc de Cinq Metres, and the banks adjacent to them; it passes N of Ankazoberavina Island and the adjacent coast of Madagascar. The chart shows a least depth of 20.1m in this approach.

The route recommended to vessels approaching from the E passes between Nosy Be and Nosy Faly and then either S of Nosy Koba or N of the later island through Passe Lokobe. Only the N of the two channels through Passe Lokobe is recommended; the least depth is 8.2m. It passes S of the shoals extending SE and SW from Pointe Tafondro, and the shoal flat W of the point; it passes N of Nosy Vorona and the reefs off the latter islet.

The channel S of Nosy Koba has on its S side the patches lying N and W of Ambato Rano; this channel is available to vessels of moderate draft. The chart shows a least depth of 10.9m in the approach.

Large vessels approaching from the W should make good a course of 022°, passing about 2 miles W of Nosy Iranja to a position from which Ankazoberavina Islet bears more than 090°, a course of 067° should then be made good, passing 1 mile N of Ankazoberavina Islet.

Vessels approaching Rade de Hellville from the E should proceed S off the E shore of Nosy Be to a position about 2 miles E of Pointe Tafondro from which the beacons near Pointe Lokobe are in line bearing 264°; course should be maintained until the beacons on Pointe Tafondro bear 040° astern; the 220° course should be maintained to a position abreast Pointe Lokobe. This channel appears to be used only by light-draft coasting vessels. In the passage between the S side of Nosy Komba and the coast, the tidal currents are strong, attaining a velocity of 2.5 knots at springs. After SW, the currents quickly reach their maximum velocity, and if the wind is fresh at this time, the seas rise quickly.

11.13 Pointe d'Ankify (13° 32'S., 48° 22'E.) can be identified by a large isolated rock which lies immediately N of the point; there is a ruined factory on the E side of the point. There is anchorage off Point d'Ankify in 10 to 12m, sand, gravel, and coral, with the E peak of Massif d'Ankify, 1.2 miles S of Pointe d'Ankify, bearing 177°, and the isolated rock close N of Pointe d'Ankify, bearing 240°. The best landing place is a little E of the point.

Helodranon Ampasindava (Baie d'Ampasindava) is entered between Pointe d'Ankify and Pointe d'Anjanozano, about 12.5 miles WSW. The bay is too open to afford shelter, but large vessels can anchor off the W shore.

There is good anchorage for vessels of moderate size in the channel W of Nosy Mamoko (13° 43'S., 48° 12'E.) in 11.9 to 14m, mud; it can be reached from either N or S of the islet.

Cap Makamby (13° 35'S, 48° 07'E.) has a drying reef extending 2 miles NNW from it; Nosy Kisimani, 90m high, lies close within its NNW extremity.

Baie d'Ambararata, on the W side of the reef extending from Cap Makamby, is a well-sheltered natural harbor. Baie

d'Ambararata affords anchorage to vessels of moderate size, 0.4 mile S of Nosy Kisimani, in from 13 to 15m, the edge of the reef fringing Pointe du Rocher should be marked before entering.

Small vessels can anchor nearer the head of the bay, taking care to avoid the vicinity of Roche du Confluent.

Baie d'Ambavatoby is entered between Pointe Makamby and Pointe Antsiraka, 0.6 mile W. Within the entrance, Baie d'Ambavatoby forms a wide basin, which divided into Baie d'Amboahangy on the E side, Baie d'Andassy Be on the W side, and Baie d'Androfiabe at the head of the bay; these inlets are encumbered with reefs and mudbanks.

Aspect.—The entrance may be identified by two hills of grayish color which overlook the entrance points. From the offing, the peninsula on the W side of the entrance resembles a group of islets. Conspicuous hills are l'Arbre Mort, 138.1m high, 2.5 miles ESE of Pointe Makamby, and Sommet de la Compagnie, 146.3m high, 1.2 miles W of Pointe Antsiraka.

Anchorage.—Baie d'Andassy Be is recommended as a secure anchorage, but Baie d'Amboahangy has the advantage of a fresh sea breeze, which keeps off mosquitoes and other insects; both these inlets offer spacious anchorage in 11 to 16m, mud, or sand and mud.

Baie d'Androfiabe has less swinging room than the other inlets, and its entrance is narrowed by the dangers mentioned above.

A vessel of moderate draft can anchor in Baie d'Andassy Be in 12.8m, with Sommet de la compagnie bearing 287° and Pointe Antsiraka bearing 040°.

Directions.—The entrance channel between the 10m curve is 0.2 mile wide.

The depression between the peaks of Montagnes Les Deux Soeurs, bearing about 162°, just open E of Pointe Marolay, leads through the entrance in a least depth of 21.9m. Pic Denude, situated 4 miles SSW of l'Arbre Mort, is also on this alignment.

Caution.—Pointe Makamby is fringed by a reef which dries and extends 0.4 mile NNW and 0.1 mile W from it; Pointe Antsiraka is more steep-to and vessels can pass about 0.1 mile E of it. A shallow bank extends 0.2 mile S from the latter point.

Pointe Amboaboaka, the S entrance point of Baie d'Andassy Be, is fringed by a reef, which dries, and a spit, with depths of less than 9.1m, extends 0.3 mile NW from the point;

Rocher Dalrymple, awash, with a patch with a depth of 3m, lying 0.1 mile W, lies just within the NW extremity of this spit. The head of Baie d'Andassy Be is divided into two parts by reefs and shoals, many of which dry.

Ile Verte, 27.1m high, lies 0.5 mile ENE of Pointe Marolay, the S entrance point of Baie d'Amboahangy; a coral reef, which dries, extends 0.5 mile NNW from it. A rocky shoal, with a depth of 4.9m, lies 0.2 mile NNE of the N extremity of Ile Verte, and a rock, which dries 0.6m, lies 0.3 mile ENE of the S extremity of the islet.

Pointe des Maques, which lies 1.7 miles SE of Pointe Makamby, is a narrow rocky point, terminating in a rock, which dries 0.9m. A shoal, with a depth of 4.9m, lies 0.1 mile S of the point.

In the entrance of Baie d'Androfiabe, there is a rock with a depth of 0.6m, 0.2 mile SE of Pointe Amboaboaka; a 7.3m shoal lies near mid-channel, 0.5 mile SE of the point.

11.14 Pointe Angadoka (13° 30'S., 47° 59'E.) is the N extremity of Ambavatobi Promontory. Nosy Ankazoberavina is a brush-covered islet, 62m high, lying with its S extremity in a position about 1 mile N of Pointe Angadoka. From the SW Nosy Ankazoberavina appears as two islets. It may be approached to within a distance of 0.2 mile despite a reef bordering it. In 1988, a depth of 10m was reported in position 13° 28.3'S, 48° 00.2'E.

Andrano Miserano (13° 40'S., 47° 59'E.) and **Anketsabe** (13° 55'S., 48° 05'E.) are useful marks between Pointe Angadoka and Pointe Sangajira.

Le Cone (15° 03'S., 47° 15'E.), **Fausse Table** (15° 08'S., 47° 16'E.), and **Mount Matable** (15° 12'S., 47° 08'E.) are conspicuous summits in the vicinity of and N of Baie de Mahajamba.

Nearly midway between Pointe Ambararata (15° 11'S., 46° 57'E.) and Pointe Anorombato is a series of vertical marks on a red ground, which appear to an observer at sea as fortifications; they are useful marks.

The coast immediately WSW of Cap Amparafaka (15° 56'S., 45° 16'E.) is marked by red sand hills. Dunes Mamelles are two white sand hills, the first of a series, lying about 11 miles WSW of the cape and are 47m high.

Between Pointe Angadoka and Cap Saint-Andre the coast recedes slightly to form a shallow bight. A coral reef, with patches of sand and weed, lies parallel with and from 5 to 15 miles off this coast; it consists of a chain of shoals and forms a barrier with some deep passages through it, and except for some shoal heads W of Iles Radama, 28 miles SSW of Pointe Angadoka, vessels drawing less than 3.7m can pass over it in good weather. Over the whole of this barrier, the water is so clear that the bottom can be seen in depths of 29.3m, and the outer edge, where the depths increase very rapidly seaward, is distinctly indicated by the change in color of the water.

Caution.—Because of the irregular nature of the bottom and the comparative scantiness of the soundings on the banks, shoals may exist which are not shown on the chart.

11.15 Nosy Kivinji, a steeply conical islet lying about 2.1 miles W of Pointe Angadoka, is conspicuous from the W.

Nosy Antsoha lies about 0.7 mile SW of Pointe Angadoka; anchorage has been taken in a position about 0.2 mile SSE of Nosy Antsoha in 14.6m.

Pointe Andrahibo, about 4.8 miles SSW of Pointe Angadoka, is marked by three tree-covered hills.

Baie Kakambana is entered between Pointe Andrahibo and Pointe Antangena, about 2.8 miles WSW. The S shore of the bay is fringed by a reef, and the S and E portions of the bay are shallow. Kibibao Rock is a danger lying nearly 1 mile SSW of Pointe Andrahibo.

Anchorage can be taken in 6.5m, with Pointe Andrahibo bearing 343°, distant 0.5 mile. The bottom of muddy sand is good holding ground, but swinging room within the deeper central area of the bay is restricted.

Riviere Baramahamay enters the sea about 7 miles S of Pointe Antangena. There are depths of about 5.8m in the entrance, but shoal water exists off the S bank, about 0.4 mile E of the S entrance point. A village, with a flagstaff, stands on the S shore of the river, about 0.6 mile from the sea.

Anchorage.—The entrance to Riviere Baramahamay affords well-sheltered anchorage, except from W winds. To small vessels with local knowledge, there is room for one vessel N of the village in a depth of 11m. Small craft can anchor in the basin, 0.5 mile farther up the river. The coastal bank in this vicinity dries. A vessel making the anchorages must keep near the center of the narrow entrance channel.

Ambatomilai, a detached rock 10.3m high, lies about 0.5 mile S of the W extremity of Nosy Iranja (13° 36'S., 47° 49'E.). From a distance, Ambatomilai appears like a boat under sail between Nosy Iranja and a small islet SSE.

Directions.—Vessels proceeding S from Hellville may pass on either side of Ankazoberavina Islet and Nosy Kivinji; the existence of the 8.2m shoal between Ankazoberavina Islet and Pointe d'Angadoka should be kept in mind.

Pointe Antangena should be passed at a distance of about 1 mile, and the vessel should then be kept from 0.8 to 1 mile off the coast S of that point until a position about 3 miles S of the Riviere Basramahamay has been reached; in this position the vessel will have passed Banc Vestal. A course should then be shaped to pass about 2 miles W of Pointe Sangajira, and with the W and lower hill of Pointe Sangajira and with the W and lower hill of Pointe Lavalohalika (14° 00'S., 47° 56'E.), bearing 145°, so as to pass about midway between Banc du Vaudreuil and the coastal reef. When the summit of Nosy Kalakajora bears 275°, course should be altered E to maintain this bearing, astern; then the summit of the 127m hill, located 2 miles E of Pointe Sangajira, bearing 015°, and in line with the reddish road between it and Anorontsangana, leads to the anchorage off the village.

The color of the water in Baie de Rafaralahy does not give any indication of the nearness of reefs. Vessels arriving in the morning, when the sun is more or less directly ahead, find it difficult to estimate the distance from the shore; the position of native boats off the town, seen over the reefs, is very deceptive to a stranger.

11.16 Nosy Radama (Iles Radama), 28 miles SSW of Pointe Angadoka, consist of four islands, named from N to S, Nosy Kalakajoro, Nosy Ovy, Nosy Antanimora (Antany Mora), and Nosy Valiha; they provide a noteworthy amount of shelter from winds from the W to the bays E of them.

Anchorage, with shelter from winds from the sea to the W, can be taken off the E shore of Nosy Ovy. Depths of 7.3 to 16.4m, with good holding ground, are available.

The bottom in the neighborhood of Iles Radama is very irregular, and even a small error in position is enough to give markedly different depths than those shown on the area chart. The banks have not been thoroughly examined, and dangers other than those shown on the chart may be assumed to exist. These islands and the adjacent mainland are frequently hidden by fog or during rain spells, and caution is necessary in approaching them or navigating in their vicinity. The water over the outer reef chain is very clear, but it is uncertain whether or not the water over patches of the inner reef can be seen, especially so far as the discolored river outflow of the rainy season reaches. It is therefore recommended that vessels keep to seaward of the outer reef chain in this vicinity except where directions are available.

Local knowledge is recommended.

11.17 Baie de Rafaralahy is entered between Lohatanjon'i Sangajira (Pointe Sangajira) and Pointe Lavalohalika, about 6.5 miles SSE.

High water and LW succeed one another at fairly regular intervals, but the height of consecutive tides varies greatly; differences as large as 2m have been noted.

A hill, 55m high, rises near the extremity of Lohatanjon'i Lavalohalika (Pointe Lavalohalika). Another hill, 84m high, rises about 1.5 miles ESE of the 55m hill.

The customhouse in the town of Andranto, situated on the N shore of the bay about 2.2 miles ESE of Pointe Sangajira, has a flagstaff near it. Fort de Sada stands on a hill rising 127m about 0.7 mile N of the town. The village of Tanandava is built on the crest of a hill extending W from the fort.

Anchorage can be taken in a position from which Pointe Lavalohalika bears 170° and the S extremity of Nosy Kalakajoro bears 264°. The depth in this position was 16.4m, and the anchorage was considered good even though it appeared to be very close to the edge of a reef.

11.18 Port Radama (14° 05'S., 47° 57'E.) is entered between Pointe Lavalohalika and Pointe Berangomaina, nearly 6 miles SSW. The E side of Port Radama, especially its S part, is low and fringed with a dense screen of mangroves. The W side is generally steep and rocky, with some mangroves on its southern part. Large vessels with local knowledge can secure good anchorage in this bay, but its usefulness is limited in that it has been only partially examined.

Winds—Weather.—A NW sea breeze, characteristic of this area and known locally as the "talio," blows from 1000 to 1700; it sometimes blows fresh, but loses itself in the narrow part of the bay.

The "varatrazo," a SE land breeze, blows lightly during the night. The wind does not raise a troublesome sea in the bay.

Tides—Currents.—The tidal currents in the entrance rarely exceed a velocity of 2 knots at springs. The currents are stronger in the S part of the bay; the water is fresh during the ebb current.

Aspect.—**Ank etsabe** (13° 55'S., 48° 05'E.) is a useful mark in this vicinity. Mount Angoroni (14° 13'S., 48° 10'E.) is isolated, and has a flat top and dark, nearly horizontal stripes on its slopes. Mount Ampombiabo (14° 19'S., 47° 55'E.) has a conspicuous clump of trees on the it called La Canine.

Lahatanjon'i Berangoma (Pointe Berangomaina) rises to an elevation of 61m, about 0.5 mile within its extremity. Ile Verte, 5 miles SE of Pointe Lavalohalika, is flat and wooded, with a distinctive group of trees at its center.

Anchorage.—Vessels can obtain anchorage, according to their size and draft, in Port Radama, but caution is necessary as there may be dangers other than those charted.

Vessels can anchor on the SW side of the bay, a little within its entrance, in 14 to 16m, with the 61m summit of Pointe Berangomaina bearing 259°, distant 2 miles.

A vessel can obtain anchorage near the head of the bay in 18m, with Mont Ankaramy (13° 59'S., 48° 12'E.) bearing 063° and the conical summit of Pointe Amboliboso (14° 10'S., 48° 00'E.) bearing 185°.

Landlocked anchorage can be obtained 0.9 mile NE of Pointe Amboliboso in 18m, but care must be taken to avoid a 0.9m shoal lying 1.5 miles N of the point.

Ramanetaka Bay lies immediately SW of Port Radama; the bay is large, but encumbered to a considerable extent by reefs and shoals, and can be recommended only to vessels with local knowledge. Such vessels proceed into the bay on either side of Nosy Valiha.

Directions.—Vessels with local knowledge approaching from the W can proceed across the outer reef chain in the vicinity of the Iles Radama by making good a course of 096° for the S summit of Nosy Kalakajoro.

It should be noted that there are numerous shoal patches and dangerous reefs on either side of this channel. Vessels approaching from the N should pass about 0.7 mile off the NE shores of Nosy Kalakajoro and Nosy Ovy, to a position about 2.5 miles N of the S extremity of the latter island. From this position a course of 137° should be steered for the 61m summit within Pointe Berangomaina, to a position where Ile Verte bears 095° and is in line with the S fall of Mount Ankaramy. A course of 095° should then be followed on this range to a position from which the 61m summit previously mentioned bears 180°, and from which the 55m summit on Pointe Lavalohalika bears 031° and is in range with Les Deux Soeurs. Vessels proceeding farther into the bay should first place buoys to mark a fairway.

11.19 Nosy Saba (Nosy Beroja) (14° 21'S., 47° 38'E.) lies 4 miles W of Pointe Antsatsiaka; its SW and higher end, 42.1m high, is covered with trees. From the W, Nosy Saba is difficult to distinguish against the coast.

Nosy Lava (14° 32'S., 47° 35'E.) lies in the approach to the roadstead off Analalava from the NW. White cliffs within the W shore of the island show very clearly when the afternoon sun shines upon them. Nosy Soy lies about 3 miles S of the S extremity of Nosy Lava; from the NW it appears like a saddle, the pommel of which is towards the NE.

Anchorage.—In the best anchorage position, Nosy Lava Light bears 210° and is seen just NW of a corrugated iron house, and the E extremity of the island bears 121°. The depths are 11.9m in this position; the depths are 10m or less to within a distance of 0.1 mile from all directions except seaward. In this position there is adequate shelter from choppy seas; Nosy Lava itself provides shelter from W winds, and the reefs fringing Nosy Lango provide shelter from seas from the SE. The entire area between the E shore of Nosy Lava and the mainland may be regarded as a large roadstead affording anchorage; the bottom, generally of sand and mud, is good holding ground. An anchorage is available to ocean-going vessels off Salara, a village on the shore of a bay indenting the N part of the E shore of Nosy Lava. The bay is entered between the E extremity of the island and a point, 15.2m high, nearly 2 miles NW. Pilier Point is the extremity of a projection from the shore of the bay in a position about 1 mile WNW of the E extremity of the island.

Directions.—Vessels approaching from the W should proceed through the outer reef chain and SW of Southwest Rocks by steering 123° for the Nosy Soi, keeping the latter islet in line with Tombee de Marotaolana. When the N extremity of Nosy Lango bears 077°, course should be changed for that extremity to a position from which Nosy Soi bears 213°. A course of 033° should then be made good, keeping Nosy Soi bearing 213° astern until the SE end of Nosy Lava has been rounded. Course should then be altered to the N, keeping Nosy

Soi open its own breadth E of the S extremity of Nosy Lava, which leads through Nosy Lava Channel and midway between the 7.9m shoal and the SE edge of the shoal bank extending SE from the E extremity of Nosy Lava; Nosy Soi kept open of the SE end of Nosy Lava leads clear of the latter bank. When the NE extremity of Nosy Lava bears 310°, it should be steered for; this 310° course leads about 0.4 mile outside the reef fringing the shore of the island. When Nosy Lava Light bears 210°, it should be steered for, which leads to the recommended anchorage position in Nosy Lava Anchorage.

Caution.—Dangers in the approach to the bay, excepting Nosy Lango and the rocks and shoals or islets near it, include a shoal, with depths of 5.2m over its outer edge, that extends about 0.7 mile SE from the E extremity of Nosy Lava. Its steep-to outer edge is marked by heavy swirls. A coral shoal, over which the least depth is 7.9m, lies about 1 mile SE of the same point. The channel between these shoals is about 0.3 mile wide, and has depths of 10 to 26m. A patch of 8.2m lies about 0.5 mile NE of the E extremity of Nosy Lava. A coral head, over which the depth is 1.8m, lies about 0.6 mile NNW of Pilier Point, and at distances of 0.3 mile NNE and also ESE of this projection are patches of 8.2 to 8.8m, respectively.

11.20 Analalava (14° 38'S., 47° 46'E.) ([World Port Index No. 47380](#)) is situated on the NW coast of Madagascar, on the SE side of the entrance of Riviere Loza SSW of Pointe Angadoka; the port is very small and consists of a small town, off which anchorage is available.

Winds—Weather.—The temperature during the dry season varies from 33° to 31° C; the temperature attains its maximum value at about 41° C. Night temperatures are usually 2° lower than day temperatures. In the rainy season the temperature varies from 29° to 31° C, but the heat is bearable. The rainy season begins toward the end of November; maximum rainfall occurs in January. The winds during the rainy season are variable, but usually NW of SW.

Tides—Currents.—The currents attain considerable strength. The outgoing ebb current of the Riviere Loza becomes stronger, and draws closer to the shore on which the town stands, as the level of low tide is approached; a countercurrent then develops between the main outgoing current and the shore, that sets back toward the entrance of the river and is strong in comparison to the main outgoing current.

The flood current sets into the river uniformly along each shore.

Depths—Limitations.—Passe du Nord (North Pass) lies between the mainland to the E and Nosy Lava, Nosy Lango, and East Lango Bank to the W. The least depth in the fairway through this channel is 9.4m.

Directions.—Vessels approaching from the N can, after passing Nosi Shaba, proceed through Passe du Nord by steering 165°, keeping the 42m summit at the SW end of that island bearing 345° astern, to a position from which Nosy Faohina bears 188° and is just open E of Nosy Lango. A course of 188° from this position leads between a 7.3m patch and a 8.2m coral patch to a position from which the S extremity of Nosy Lava bears 259°. When this position has been reached, the beacon on the plateau SW of the town of Analalava should be steered for, bearing 155°, to a position from which

Analalava Light bears 095° and is in line with Ballon Loza. A course of 095° then leads to the anchorage.

11.21 Passe du Milieu (Middle Pass), leading ENE, is the only marked channel of the three, and is considered the principal channel partly for that reason. The fairway is about 0.5 mile wide between the 9.1m curves. Nosy Lango Reef and East Lango Bank lie on the N side of the channel, and Nosy Faohina Reef and Channel Bank lie on the S side. Nosy Soy, in the outer part of the channel, can be passed on either side; the directions available indicate that vessels can pass over the N end of Channel Bank. The least depth in the channel is 7.2m.

Passe du Sud (South Pass), trending NE toward the town, has Table Bank on its SE side and Nosy Faohina Reef on its NW side. The fairway has a least width of about 0.5 mile and has a least depth of 5.8m. The tidal currents in the channel are not as strong as those in Passe du Milieu.

A shoal flat bordering the N point of the entrance of Riviere Loza was reported to be extending seaward. This point should not be approached closer than 0.7 mile.

Aspect.—Pic Loza (Ballon Loza) (14° 38'S., 47° 49'E.), a summit 221m high, rises E of the entrance of the river.

Faux Loza (14° 40'S., 47° 47'E.), a peak 140m high, rises SSW of Pic Loza; the latter has a rounded S extremity as does a plateau behind the town; both terminate S in a large rift.

Tombee de Marotaolana (14° 43'S., 47° 44'E.), a summit 259m high, rises SSW of False Loza and nearly 6.5 miles S of the town. A plateau, 49m high, rises close to the coast in a position about 2.5 miles SSW of the town.

Sommet Antsatramahavecon (14° 29'S., 47° 48'E.), another useful mark in this vicinity, rises in a gentle, wooded slope to an elevation of 332m.

The Residence is a large building of brick and stone overlooking the town. A white house with a red roof, in a position 0.4 mile NNW of Analalava Light, is of use in establishing a course through a portion of Passe du Milieu.

The S extremity of Nosy Lango Reef is marked by a beacon.

The N edge of Nosy Faohina Reef is marked by a beacon.

D'Andronjana Range is established by two beacons. The front beacon stands on the N shore of the estuary of Riviere Loza in a position about 2.3 miles NNW of Analalava Light. The rear beacon stands about 1.8 miles ENE of the beacon. These beacons, in line and bearing 068.75°, lead through a portion of Middle Pass.

Table Range is established by two beacons. The front beacon stands on the 49m plateau SSW of the town. The rear beacon stands about 5 miles ESE of the front beacon. These beacons, in line and bearing 120°, lead through a channel that bypasses the least depth of 7.2m in that channel.

A range useful in taking up the recommended anchorage position is established by two beacons, each supporting a board pointed in black and white checkers. The front beacon is on the S side of the estuary in a position about 0.9 mile N of Analalava Light. The rear beacon, nearly 2 miles NE of the front beacon, is on the N side of the river. These beacons are in line bearing 047°. The beacons are difficult to identify, especially in the early morning, the rear one only being discernible when a vessel arrives at the anchorage.

Signals.—There is a signal station, with which vessels can communicate by day, at Analalava. Signals indicating the locality threatened by a cyclone are displayed.

Directions.—Vessels should pass about 0.3 mile S of Nosy Soi. When the highest cluster of trees on Nosy Eaohina bears 088° , and is in line with Ballon Loza, course should be changed to 088° to a position from which Mount Antsatramahavelona bears 047° and is open E of Nosy Lango. The beacons forming E'Andronjana Range should then be steered for bearing 068.75° . This course leads between the beacon on the S end of Nosy Lango Reef and the beacon on the N end of Nosy Faohina Reef. When Analalava Light bears 095° and is in line with Ballon Loza, the course should be changed to 095° for the anchorage. This course leads over shoals off the S end of Channel Bank in depths of 7 to 7.9m.

Anchorage.—The anchorages off Analalava lie between the deep gully in the entrance of Riviere Loza, and the steep-to bank which forms the LW mark off the town. In the vicinity of the deep gully, the bottom is sand, and the eddies cause vessels anchored there to swing continually. There is a countercurrent in the gully, which becomes more pronounced the farther S a vessel lies in it.

Anchorage can be obtained with the anchorage beacons in line bearing 047° , and Analalava Light in line with Pic Loza, bearing 095° . This berth is inconvenient, because of the distance offshore, and the strong currents; a better one is farther NE, with the same beacons in line and 0.2 mile WSW of the head of the pier, in 25.6m, 0.1 mile from the 10m curve.

Smaller vessels can anchor 0.1 mile off the head of the pier in 18m, sand, with the anchorage beacons in line bearing 047° , and Analalava Light bearing 129° ; if a vessel's draft permits, she should anchor closer to the pier, although the eddies, as stated above, will cause a continuous swing.

Ocean-going vessels can approach this estuary by way of channels trending generally S, ENE, and NE, respectively, between off-lying islets and dangers, and take anchorage off the town of Analalava, which stands on the S bank of the estuary. Anchorage can also be taken at places farther in.

Vessels can proceed through Passe de Milieu at night by observing the white and red sectors of Analalava Light; by so doing they will remain in depths of 7m or more.

The entrance of Riviere Loza presents no difficulties, and a vessel should proceed in mid-channel. The steep-to coastal bank on the SE side of the entrance is easily distinguished.

There is anchorage 2 miles within the entrance of Riviere Loza in Baie de Bois Sacre, on the S side, in 19m, mud and sand, 0.1 mile off the mangroves; it is indicated by the intersection of the alignments of two pairs of beacons, bearing 060° and 125° . This anchorage is better sheltered than that off Analalava and is used by vessels loading logs, which are floated down river.

Directions.—When approaching Pointe Loza, the projecting point, covered with dense jungle, at the sharp bend 4 miles within the entrance, the east bank of the river should be kept aboard and the point rounded closely to avoid the sandbank which fills the bay N of the point. Then a mid-channel course leads to Lagune Panantsopa, about 9 miles above the entrance of the river; this lagoon has been only cursorily examined, and there are some dangerous shoals. A vessel may anchor in 10m

about 0.1 mile from the village of Panantsopa, after having passed over depths of 5m.

11.22 Helodranon'i Nirinda (Baie Narinda), on the S side of the approaches to Analalava, is entered between **Pointe Maromony** ($14^\circ 39'S$, $47^\circ 27'E$), 8 miles SW of the SW extremity of Nosy Lava, and Pointe Antsamanara, 13 miles E.

In 1956, a S current into Baie Narinda was observed at a velocity of about 1 knot.

White cliffs on the coast in a position about 9 miles SW of Pointe Maromony are a mark for the approach to Baie Narinda from the SW. Pointe Maromony is marked on its E side by some red cliffs. Pointe Komatsana, 3.5 miles SE of Pointe Maromony, can be identified by some white cliffs at its extremity. Tombee de Marotaolana rises about 3.5 miles ESE of Lohatanjon'i Maroangolo (Pointe Antsamanana). Ankalafa, a village 3.2 miles SSW of Pointe Komatsana, is hidden by trees, but can be identified by the boats lying on the beach. There are some white cliffs 9 miles SW of Pointe Vatonomby, a promontary, which lies 3.7 miles SE of Ankalafa. Riviere Atsinjo flows into the SE side of the bay, 18 miles SSW of Pointe Antsamanara.

A lighted buoy is moored 2.2 miles E of Pointe Komatsana; it marks a swell gauge.

The only anchorage used in Baie Narinda is off the mouth of Riviere Atsinjo, with the S entrance point of the river bearing between 085° and 095° , distant 4 miles.

11.23 Lohatanjon'i Marolahy (Pointe Marolahy), about 16 miles SW of Lohatanjon'i Maromony (Pointe Maromony), slopes down to a circular red cliff, which is conspicuous from the S. A conspicuous parasol tree stands on the summit of a rounded plateau, 65m high, in a position near the coast about 2 miles NE of Pointe Marolahy.

Baie de Moramba is entered between Pointe Marolahy and Pointe Majambo, about 5.5 miles S. Two bare islets, one close off it and the other about 0.3 mile SSW of it, are useful marks for Pointe Majambo.

At Baie de Moramba, spring tides rise 3.2m and neap tides rise 2.6m.

A bar extends S across the entire bay from a position on the N shore about 2 miles SE of Pointe Marolahy. The least depth on the bar is 2.7m. The channel leading into the inner part of the bay narrows to a width of about 0.8 miles at a distance of 2 miles within the bar. Rocky, tree-covered islets lie off the N shore at this narrow place. Ile du Goulet is the largest and southeasternmost of these islets.

Anchorage.—Anchorage can be taken in the bay outside the bar in 11 to 14m, over a bottom of mud. In the recommended position the S extremity of Ile du Goulet bears 072° . Anchorage can be taken closer in, with better holding ground, in a depth of 8m.

In the inner part of the bay there is good shelter for small vessels. Vessels drawing 4.6m may enter at or near HW, and anchor in a position about 0.2 mile SE of Ile du Goulet in 9.1m. The S extremity of Ile du Goulet, bearing 072° , leads across the bar in a least depth of 4.9m.

Directions.—Vessels approaching from the N should steer 207° for Pointe de Marolahy to a position from which Nosy Soi bears 075° and is in line with Pointe Maromony. A vessel in

this position is S of Diamond Bank. Then a course of 248°, keeping Pointe Maromony bearing 068° astern, should be made good to a position from which Pointe de Marolahy bears 186°. It is necessary to round the latter point at a distance of at least 1 mile, safely outside the reef fringing that point.

The S extremity of Ile du Goulet, kept bearing 072°, leads across the bar in a least depth of 4m. Buoys should be placed to mark the fairway before proceeding into the inner part of the bay.

11.24 Helodranon'i Mahajamba (Baie de Mahajamba) is entered between **Lohatanjon' Ambozomena** (Pointe Manakara) (15° 12'S., 47° 02'E.) and Pointe Ambararata.

Depths—Limitations.—The extensive inner area within the narrows has not been completely surveyed.

Ocean-going vessels can anchor almost anywhere in the outer part of the bay between the entrance and the narrows.

Aspect.—Ambararata Plateau, which rises near Pointe Ambararata, is on the W side of the entrance of Baie de Mahajamba; two circular red cliffs of the plateau are conspicuous. When the sun shines on the cliffs, two large red patches are visible; the NE patch is larger and darker than the other. When the sun is behind the land, a red watercourse formed by the torrent in the W circle of cliffs is visible when bearing more than 165°.

Mount Masiaposa, on the E side of the entrance, appears as a wooded plateau; Fausse Table, NE of Mount Masiaposa, has a similar appearance. Pointe Ambararata is easily distinguished by the contrast between its regular form and the rugged outlines of Ambohitsambo and Antranonaombi, summits 8 and 10 miles SSW, respectively, of the point.

Pain du Sucre, a tree-covered hill, 114m high and named according to its shape, rises about 2.5 miles WSW of Pointe Ambararata.

Pointe Manakara has close S of it a white patch that is conspicuous when the afternoon sun shines on it. This is a useful mark for vessels passing between Toraka Anelanelana (Banc Intermediaire) and Toraka Thetys (Banc de la Thetis).

Directions.—Vessels approaching from the NE can proceed along the coast in depths of 9.1 to 10m, but must head seaward before reaching a position near Pointe Ambatomifoko so as to clear the shoals off that point, the depths are 9m or more at distances of 4.5 miles from the point. After having cleared these shoals, the coast may again be approached; depths of 14.6 to 20.1m will be found at distances of 1 mile offshore.

Vessels approaching from the NW can proceed through Grand Pass by making good a course of 135° for Pointe Ambararata. When a position has been reached from which Sommet Masiaposa bears 113°, course should be changed to 113° so as to pass NE of Banc de la Lyra. Course can be altered to the S to enter the bay when a position has been reached from which Pointe Ambasilava bears 180°.

Vessels approaching the bay from the SW should pass W and N of Banc de la Lyra; Sommet Masiaposa should then be brought to bear 113° and the directions given in the preceding paragraph followed into the bay. The shortest route from the SW is by way of West Channel, between Banc Intermediaire and Banc de la Thetis. A vessel can pass safely through this channel by steering 096° for Sommet Masiaposa, keeping that summit in range with the white mark close S of Pointe Ambozomena to a position from which

Pain de Sucre bears 229°, when course can be altered to the S as before to enter the bay.

It should be noted that the channel between Banc de la Lyra and Banc Intermediaire should be avoided.

Local knowledge is essential for entering Baie de Mahajamba.

Anchorage.—Anchorage, with good shelter from SE winds, can be taken NW of Pointe Ambararata; in the recommended position the point bears 125° and Pain du Sucre bears 219°; the depths here are 12 to 14m, and the bottom is mud.

Anchorage can also be taken SE of Pointe Ambararata, with shelter from NW winds; in the recommended position in this direction the point bears 311° and the summit of the highest sand dune between that point and Pointe Ampasilava, about 1.5 miles SSE of Pointe Ambararata, bears 256°; the depths in and near this position are 14m, and the bottom is mud.

During the winter months, a desirable anchorage, with shelter from NW winds and swell, can be taken off the village of Ambenja, nearly 4.5 miles S of Pointe Ambararata; in the recommended position, Pointe Ampasilava bears 343°, and a large sand dune at the entrance of Riviere Ambenja bears 240°.

This position is about 0.3 mile from the outer edge of the shoal fringing this side of the bay, and the depths are 12 to 14m.

Anchorage can also be taken off the village of Mangoaka, on the E shore of the bay, about 3 miles SSE of Pointe Manakara. The depths are 10 to 11m, and the bottom is mud, in a position with Pointe Ambolibozo, about 2 miles S of Pointe Manakara, bearing 343° and in range with Pointe Amboaniho, about 0.8 mile SSE of Pointe Ambolibozo; in this position Mount Masiaposa bears 064°.

There is well-sheltered anchorage for small vessels just inside the basin in a depth of 8.5m, good holding ground, off a cove on the W side of Tombee Manja, a point, 77.1m high, 1.5 miles E of Nosy Longany.

The anchorage is with Tombee Manja bearing 065° and a daymark on the trunk of a baobab tree bearing 330°. The 10m line extends farther S than is shown on the area chart. The tidal currents are strong, the incoming current running SSE and the outgoing current running NNW.

11.25 Helodrano Baly (Baie de Baly) is WSW of Baie de Mahajamba. Before describing this coast and its ports, it may be convenient to consider the shoals of the outer reef chain abreast this section, and the various passes through which the coast may be approached.

Mariners are advised to use caution when in the vicinity of the outer banks and shoals.

Directions.—A vessel entering Baie de Baly during the flood tidal current must guard against being set towards the shoals off Pointe Sada. She should steer for the 66.5m hill, 7 miles S of Cap Amparafaka, bearing 209°, until Pointe Sada bears 090°, when course should be altered SSE to put the conspicuous tree, on the E side of the head of the bay; ahead, bearing 161°, which bearing leads up the fairway; when Marotia (16° 02'S., 45° 23'E.) bears less than 100°, the depths decrease quickly towards the head of the bay.

Riviere Tsimanenoakoho flows into the sea SW of Pointe Ambararata. A bar, over which the depth is 2.5m, extends

across the entrance of the river, but within the bar is a good channel with depths of 4.9 to 10.1m.

The village of Marasokoa stands on the S side of the entrance of the river. Spring tides rise 4.2m and neap tides rise 3.2m at Marasokoa.

Coastal vessels enter the river at HW and find good shelter from W winds off the village.

Majunga (Mahajanga) (15° 42'S., 46° 19'E.)

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11.26 Majunga (Mahajanga) is situated just within the entrance of Helodrano Bombetoka (Baie de Bombetoka) on its E side, the port is very small and consists of a town and a roadstead off the town where ocean-going vessels can anchor.

Winds—Weather.—During the dry season, the mornings at the anchorage off Majunga are usually calm. In the afternoon a sea breeze often raises a choppy sea.

Tides—Currents.—In the entrance of Baie de Bombetoka, the tidal currents are always strong. During the rainy season, the outgoing current can attain a velocity of 4 knots, and the incoming current, at neaps, sometimes becomes imperceptible. Within the 5m curve, the tidal currents decrease rapidly in strength. At the anchorage for large vessels off Majunga the flood current attains a velocity of 2 knots, and the ebb current a velocity of 3 knots.

The ebb current from Riviere d'Amparihindro, the outlet of which lies about 1.3 miles E of Majunga, at times combines with the ebb current from the inner bay to produce a cross-current that may swing a vessel at anchor to a position at right angles to nearby vessels. The closer a vessel can approach the shore the less the currents will be felt.

It is better to sail after the incoming current, as there is little room for turning a vessel.

During the outgoing current, it is not unusual to see numerous red or discolored patches of water in the approach channels, while the water over the shoals and banks in the neighborhood appears much clearer; this is caused by the muddy water flowing into the sea from the river. Deposits of mud have been noticed in certain parts of the channels.

Between Baie de Bombetoka and Cap Amparafaka the current sets generally W to the SSW in calm weather; with a light WNW to NW breeze it has a rate from 0.25 to 0.5 knot. With a WSW breeze the current turns toward S but is very weak.

Depths—Limitations.—Vessels can enter day or night. Maximum draft allowed is 10m.

It was reported (1994) that the harbor is subject to severe shoaling.

Aspect.—Observers approaching from the N will probably first make out Massif Katsepe, the highest land in the vicinity of the entrance of Baie de Bombetoka.

Point Katsepe is about 52m high; a conspicuous white patch, resembling a sail, on the point faces seaward, and is detached from the red cliffs of Katsepe to the W. Point Katsepe Light is occasionally extinguished for up to two hours.

Nosy Makamby, an islet lying about 18 miles W of Massif Katsepe and about 3 miles offshore, is a useful mark to vessels approaching Baie de Bombetoka from the W.

Pointe Anorombato (15° 43'S., 46° 18'E.), the E entrance point of the bay, is marked by a conspicuous radio tower. The radio tower can be seen at 20 nautical miles during the daylight, but it is not lighted. A meteorology pylon stand near Anorombato Light.

Massif de Kandrary, a mark useful to vessels approaching from the NE, rises about 3.5 miles S of Massif Katsepe; the former has a well-defined summit.

Range beacons stand near Pointe Besistka (15° 50'S., 46° 22'E.), on the S side of the peninsula projecting W from the E shore of the bay to form the narrows. The front beacon is known locally as Jovany Beacon, and is 6.1m high, standing on Pointe Besistka. This point is nearly 3 miles E of Pointe Antanandava (15° 50'S., 46° 19'E.). The rear beacon, 11.9m high, stands on the summit of the peninsula in a position about 0.9 mile E of the front beacon. This rear beacon is visible from the anchorage off Majunga and also from seaward, according to a report; it should not be confused with either Nosy Beza Beacon (15° 46'S., 46° 20'E.) or with Ambatomalama Beacon (15° 48'S., 46° 22'E.). The above beacons in line lead toward an anchorage area off the S side of the peninsula forming the narrows; one such area is Boanamary.

Pilotage.—If requested at least 12 hours in advance by radio, the harbor master will board a vessel 2 miles N of Katsepe Light and pilot the vessel to the anchorage. Otherwise, the harbor master indicates anchor berths by radio.

There is said to be a set seaward during a falling tide.

Signals.—There is a signal station on Pointe de Sable (15° 44'S., 46° 18'E.); storm signals are shown.

Anchorage.—Vessels proceeding to the anchorage off Majunga should anchor from 0.3 to 0.4 mile S or SW of Pointe de Sable, according to bearings indicated on the area chart, in about 9m. Small vessels with local knowledge can anchor farther E in 5m.

A vessel of deep draft anchored at 15° 43'34"S, 46° 17'42"E, with Pt. Katsepe light bearing 279°, radio mast bearing 033°, and Ambatomalaba Bnat bearing 134°. The hard mud provided good holding ground. The depth was reported to be about 13m. This anchorage was reported to be the best one for deep draft vessels.

Vessels of moderate draft wishing to anchor farther up the bay, off Pointe Boanamary, should approach the anchorage area with the range beacons in line and anchor when the factory chimney on Pointe Boanamary bears 037°, in about 8m; the holding ground is poor in the rainy season, from December to April.

Only small vessels with local knowledge can anchor farther in the bay. The bottom of hard mud is good for holding; during the rainy season, the very violent ebb current necessitates a careful watch of the hold of the anchor.

Caution.—The harbor is subject to severe shoaling.

It is reported that Nosy Beza Beacon and Ambatomalama Beacon, particularly the latter, are difficult to make out from November to January during the hours of morning when the sun is behind them. The Nosy Beza range beacon is difficult to see as it blends in with the background vegetation.

Banc du Narcissus fronts the entrance to Baie de Bombetoka. It extends about 10.5 miles N of Pointe Anorombato. Four shoals, with depths of 5.5m and less, lie on this bank.

Baie Boina affords anchorage to small vessels with local knowledge, but the approach is encumbered with reefs and shoals, and the channel is difficult to follow because of a lack of marks.

The only recognizable objects are Nosy Makamby and a conspicuous clump of trees at the N end of Nosy Antseranandava, on the W side of the entrance.

The approach channel, which has a least depth of 4.9m, leads SE, then SW close to the E shore. The dangers are difficult to see because of the muddy water.

11.27 Nosy Makamby (15° 43'S., 45° 54'E.) lies 5.5 miles NW of the W entrance point of Helodrano Boina (Baie Boina) from a distance, it appears to be of a reddish color and the only good landmark. The islet consists of a long narrow plateau, terminating N in a gentle slope and falling steeply on its E and W sides.

Good anchorage is obtainable in 10m, mud, with the N extremity of Nosy Makamby bearing 309°, distant 1.5 miles; this anchorage affords good shelter from SW winds.

Tanjona Tanjo (Cap Tanjona), one of the few landmarks on this coast, is fringed with white rocks and scored horizontally with white streaks; it has a flat summit covered with trees. The land within the cape is a plateau with a cleft in it, which makes it appear from a distance as two islands close together. From the summit of Cap Tanjo, at its extremity, the cape slopes gently S at first and then declines suddenly. A chain of small hills prolongs the S end.

Vessels can anchor, according to draft, about midway between Nosy Makamby and Cap Tanjo; the depths decrease uniformly.

Helodrano Marambitsy (Baie de Marambitsy) is entered between a point about 5.8 miles SW of Cap Tanjo and a point about 8.5 miles farther SSW. The entrance is almost blocked by a shallow coral reef extending 5.5 miles offshore; the reef is steep-to at its W edge, and is not marked by any change in color of the water. A narrow and tortuous channel leads into the bay, which is well-sheltered, but it should only be entered by small vessels with local knowledge.

Caution.—Off this part of the coast, at certain seasons and in calm weather, the sea is often found covered for miles with a yellowish oily substance which, under the action of a breeze, breaks up into large patches; from the change thus caused in color of the water, this might be thought to indicate the

presence of shoals. The cause, however, is the diffusion of the seed of the mangrove washed out of the various rivers; this substance is found to have a strong scent resembling linseed.

11.28 Helodrano Baly (Baie de Baly) is entered between **Pointe Sada** (15° 59'S., 45° 20'E.) and Cap Amparafaka, 5.5 miles NW, and affords good shelter.

Tides—Curr ents.—The tidal currents in Baie de Baly attain a velocity of 2 knots at springs.

Depths—Limitations.—The depths in the fairway leading through the entrance of Baie de Baly are 10.9 to 16.4m; the depths are 9.1m or more as far as a position within the bay from which Tanjona Marotia (Pointe Marotia), about 4 miles SE of Tanjona Sada (Pointe Sada), bears 100° or less. The bay within this bearing is comparatively shallow.

Aspect.—Pointe Sada is 43m high and rises to two hills, which terminate in white cliffs on their W side.

Cap Amparafaka, 28.3m high, consists of red cliffs which are conspicuous from the W.

On the E side of the head of Baie de Baly are some red cliffs, crowned by trees, which break the uniform screen of mangroves bordering the head of the bay; one of these trees is conspicuous and stands at an elevation of 31.4m.

Anchorage.—Vessels can anchor in 12 to 14m, stiff mud, near the middle of the fairway, with the village of Marotia on Pointe Marotia, bearing 105°, or in about 8.8m, 4 miles W of the village.

These anchorages are well-sheltered from W or NW winds, which blow during the day in the dry season.

Small vessels may anchor in 6m off the village of Baly in the channel that extends S from a position abreast Pointe Tranofotaka, which lies about 7.3 miles S of Pointe Amparafaka.

Riviere de Vilamatsa flows into the sea E of Cap Saint-Andre, and may be identified by two low white sand dunes, surmounted by clumps of casuarina trees.

A bank of sand and coral, over which the sea almost always breaks, and which is steep-to at its northern edge, extends 2.5 miles from the river's mouth.

Caution.—A shoal, with a least depth of 4.3m, lies on the E side of the fairway, 2 miles W of Pointe Sada; there is an 8.8m shoal patch 2.5 miles WSW of the point.

The head of the bay is encumbered with banks and shoals which dry.